

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 2004/001810

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: C23C 14/08, C23C 14/56, C23C 30/00, H01L 31/02, H01L 6/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: C23C, H01L, H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, IEEE, CA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03048402 A1 (ATI PROPERTIES, INC.), 12 June 2003 (12.06.2003), page 4, line 21 - page 7, line 23; page 44, line 8 - line 18, claims 25,27, abstract --	1-2,15
X	PATENT ABSTRACTS OF JAPAN vol 009, no 317 12 December 1985 (1985-12-12) & JP60149778 A (MITSUI ENG & SHIPBUILDING CO) 07 August 1985 (1985-08-07) abstract --	1-14

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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"&" document member of the same patent family

Date of the actual completion of the international search

24 April 2005

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Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Ingrid Grundfelt/MP

Telephone No. +46 8 782 25 00

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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X	<p>DATABASE WPI Week 198538 Derwent Publications Ltd., London, GB; Class M13, AN 1985-232635, & JP 60149778 A (MITSUI ENG & SHIPBUILDING CO), 07 August 1985 (1985-08-07) abstract</p> <p>--</p>	1-14
X	<p>EP 0416887 A2 (NIPPON STEEL CORPORATION), 13 March 1991 (13.03.1991), page 2, line 52 - page 3, line 14; page 3, line 55 - page 6, line 41</p> <p>--</p>	1-10,14
X	<p>US 4519339 A (MASATSUGU IZU ET AL), 28 May 1985 (28.05.1985), column 1, line 60 - column 4, line 28, figures 1,2,6</p> <p>--</p>	1,15
X	<p>DATABASE WPI Week 199505 Derwent Publications Ltd., London, GB, Class H06, AN 1995-032418 & JP 6315641 A, (TOYO RADIATOR CO LTD) 15 November 1994 (1994-11-15) abstract</p> <p>--</p>	1-10,14
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X	<p>PATENT ABSTRACTS OF JAPAN vol. 016, no.518, 26 October 1992 (1992-10-26) & JP 4193968 A (KOBE STEEL LTD) 14 July 1992 (1992-07-14) abstract</p> <p>--</p>	1,7-11

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A	US 5510008 A (JAINAGESH A. SEKHAR ET AL), 23 April 1996 (23.04.1996), column 2, line 17 - line 56 --	2
A	WO 03007386 A1 (MIDWEST RESEARCH INSTITUTE), 23 January 2003 (23.01.2003), page 1, line 6 - line 9; page 3, line 11 - page 5, line 19, figure 1, abstract --	1-15
A	US 4585537 A (TAKEHISA NAKAYAMA ET AL), 29 April 1986 (29.04.1986), column 4, line 22 - line 33; abstract --	1-15
A	Takya Satoh et al., "Cu(In,Ga)Se ₂ solar cells on stainless steel substrates covered with insulating layers", Solar Energy Materials and Solar Cells, Volume 75, Issues 1-2, January 2003, Pages 65-71 Living Environment Development Center, Matsushita Electric Industrial Co., Ltd., Kyoto, Japan --	1-15
A	K. Herz, et al., "Diffusion barriers for CIGS solar cells on metallic substrates", Thin Solid Films Volumes 431-432, 1 May 2003, Pages 392-397, Zentrum für Sonnenenergie- und Wasserstoff-Forschung (ZSW), Stuttgart, Germany --	1-15
A	K. Herz et al., "Dielectric barriers for flexible CIGS solar modules", Proceedings of Symposium P on Thin Film Materials for Photovoltaics, Thin Solid Films, Volumes 403-404, 1 February 2002, Pages 384-389, Zentrum für Sonnenenergie- und Wasserstoff-Forschung (ZSW), Stuttgart, Germany, Institut für Plasmaforschung (IPF) der Universität Stuttgart, Stuttgart, Germany --	1-15

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	S.LINDEROTH et al; "INVESTIGATIONS OF Fe-Cr FERRITIC STEELS AS SOFC INTERCONNECT MATERIAL" Materials Research Society; vol 575, 2000 --	1-15
E	WO 2005015645 A1 (SANDVIK AB), 17 February 2005 (17.02.2005), the whole document -- -----	1-15

WO	03048402	A1	12/06/2003	AU	2002350227 A	00/00/0000
				BR	0214588 A	03/11/2004
				CA	2465604 A	12/06/2003
				EP	1448803 A	25/08/2004
				FI	20045186 A	21/05/2004
				US	6641780 B	04/11/2003
				US	20030124019 A	03/07/2003
				US	20040050462 A	18/03/2004
<hr/>						
EP	0416887	A2	13/03/1991	DE	69018170 D,T	27/07/1995
				JP	2619838 B	11/06/1997
				JP	3097865 A	23/04/1991
				US	5427843 A	27/06/1995
<hr/>						
US	4519339	A	28/05/1985	BR	8103024 A	09/02/1982
				DE	3172482 D	00/00/0000
				EP	0041773 A,B	16/12/1981
				JP	2741638 B	22/04/1998
				JP	7038125 A	07/02/1995
				MX	155842 A	11/05/1988
				US	4410558 A	18/10/1983
<hr/>						
US	3920583	A	18/11/1975	DE	2422851 A,C	20/11/1975
				FR	2270002 A,B	05/12/1975
				GB	1471138 A	21/04/1977
				IT	1014163 B	20/04/1977
				JP	870512 C	13/07/1977
				JP	50144689 A	20/11/1975
				JP	51048473 B	21/12/1976
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US	5510008	A	23/04/1996	AU	688961 B	19/03/1998
				AU	3398695 A	15/05/1996
				CA	2203170 A	02/05/1996
				DE	69510808 D,T	18/11/1999
				EP	0783597 A,B	16/07/1997
				NO	971827 A	21/04/1997
				WO	9612833 A	02/05/1996
<hr/>						
WO	03007386	A1	23/01/2003	NONE		
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US	4585537	A	29/04/1986	AT	78522	T	15/08/1992
				AT	126551	T	15/09/1995
				CA	1267864	A	17/04/1990
				DE	3485829	A,T	27/08/1992
				DE	3486402	D,T	04/04/1996
				EP	0144055	A,B	12/06/1985
				SE	0144055	T3	
				EP	0478010	A,B	01/04/1992
				SE	0478010	T3	
				JP	60119784	A	27/06/1985
				KR	9008504	B	24/11/1990
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WO	2005015645	A1	17/02/2005	SE	0302206	D	00/00/0000
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Date of the actual completion of the international search

19 May 2005

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Name and mailing address of the ISA/
 Swedish Patent Office
 Box 5055, S-102 42 STOCKHOLM
 Facsimile No. +46 8 666 02 86

Authorized officer

Ingrid Grundfelt/MP
 Telephone No. +46 8 782 25 00

CORRECTED

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				WO	9612833	A	02/05/1996

WO	03007386	A1	23/01/2003	NONE			

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